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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,130

09/29/2005

Takahiro Kishioka

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EXAMINER

HAMILTON, CYNTHIA

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

05/27/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/551,130	<b>Applicant(s)</b> KISHIOKA, TAKAHIRO	
	<b>Examiner</b> Cynthia Hamilton	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-9 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4, 7-9, 11-14 is/are rejected.
- 7) ☒ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/06/09</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 4 is rejected under 35 U.S.C. 102(B) as being by Ishidoya et al (US 5,521,011).

With respect to instant claim 4, composition of Table 5, Example 10 and Example 14 in Table 7 and Example 26 in Table 10, Example 29 in Table 14 and Example 60 of Table 21 of Ishidoya et al anticipates the instant composition of claim 4 in that Compound D1 has both a glycidyl group and protected acid groups formed from COOH and vinyl ether compounds. While the use of the compositions of Ishidoya et al are different than that of applicants the composition has all of the essential components set forth thus inherently as the ability to be used in a lithography process of manufacture of a semiconductor device. The solvents are xylene and n-butyl acetate.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 is written as follows:

A resist underlayer anti-reflective coating forming composition for use in a lithography process of manufacture of a semiconductor device comprising a solvent; and a polymer compound having a carboxyl group or a protected carboxyl group, an epoxy group,.

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The nature of the polymer is not clear from this language. Is the epoxy group another "or" group or is it required present? There is no indication how the epoxy group is part of the composition claimed. The comma followed by the period is also confusing. The examiner believes part of claim 4 were probably left out by accident but she cannot make assumptions as to what was meant as there is no real indication in the claim language as to what was meant.

5. Claims 2 and 11-12 are rejected under 35 U.S.C. 102(B) as being by Ishidoya et al (US 5,521,011). With respect to instant claims 2 and 11-12, Examples 13, 18-19, 25, 28, 51, 59, 62-64 and 80 of Ishidoya et al anticipate the instant inventions of applicants' claims 2 and 11-12 wherein A-1 is inherently of a molecular weight less than 2000. "A generic claim cannot be allowed to an applicant if the prior art discloses a species falling within the claimed genus." The species in that case will anticipate the genus. *In re Slayter*, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960); *In re Gosteli*, 872 F.2d 1008, 10 USPQ2d 1614 (Fed. Cir. 1989).

6. Claims 2 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Lees et al (5,380,804). The formulations of Example 3 Part A of Lees et al anticipate the instant coating compositions of claims 2 and 8. The compositions of Lees et al are inherently able to act as undercoating compositions or to be made into undercoating compositions thus being "forming" capable. The issue of anticipate is specific to the one specie of composition reproduced below:

### EXAMPLE 3

#### Part A

Formulations 1 to 17 were prepared using glycidyl methacrylate (GMA) copolymers, and 1,3,5-tris-(2-carboxyethyl)isocyanurate (TCI) crosslinker and a cure catalyst as follows:

A 50 weight percent solution of the GMA copolymer, the TCI crosslinker, and the catalyst in N,N-dimethylformamide (DMF) was prepared and applied to Bonderite® 1000 panels using a #32 wire cator applicator. (Bonderite® is a registered trademark of Parker Chemical Company for phosphated cold rolled steel (CRS). "Iron phosphated CRS" is equivalent to "Bonderite 1000".) After drying at room temperature for a few minutes, the coated panels were placed horizontally in a mechanical forced stream convection oven at a specified temperature/time cure cycle. After curing the panels, the physical and resistance properties of the resulting coatings were measured.

. GMA copolymer is the instant polymer compound having an epoxy group. 1,3,5-tri-(2-carboxyethyl)isocyanurate (TCI) crosslinker is the compound with a molecular weight of 2000 or less having at least two carboxyl group and an s-triazine trione skeleton and dimethylformamide (DMF) is the species of solvent used in the composition of Example 3. This composition has each component set forth in a species of the claimed invention and is coated on a substrate thus is a coating forming composition. What is not disclosed is applicants intended use in

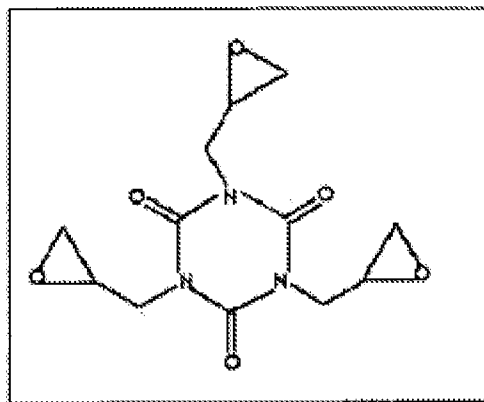
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semiconductor device manufacture via a lithography process as a resist underlayer anti-reflective coating. The composition of Example 3 of Lees since it has all of the components as in the instant invention is inherently capable of being so used. Mere recitation of newly discovered function or property, inherently possessed by things in prior art, does not cause claim drawn to those things to distinguish over prior art; Patent Office can require applicant to prove that subject matter shown to be in prior art does not possess characteristic relied on where it has reason to believe that functional limitation asserted to be critical for establishing novelty in claimed subject matter may be inherent characteristic of prior art; this burden of proof is applicable to product and process claims reasonably considered as possessing allegedly inherent characteristics. *In re Best, Bolton and Shaw* (CCPA) 195 USPQ 430. "A generic claim cannot be allowed to an applicant if the prior art discloses a species falling within the claimed genus." The species in that case will anticipate the genus. *In re Slayter*, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960); *In re Gosteli*, 872 F.2d 1008, 10 USPQ2d 1614 (Fed. Cir. 1989). The addition to claim 2 of "a polymer compound produced by addition polymerization" is a product by process limitation. The copolymer of glycidyl methacrylate is made by addition polymerization through the methacrylate group and thus fits the requirements added to the claimed invention. The addition reaction is  $-C=C-$  to  $C-C$  polymeric bond wherein no atom is lost thus "addition" reaction. Applicants argue that Lees does not anticipate because the compositions of Lees are further reacted. This does not remove the obviousness of the composition before such further reaction. The reject stands.

7. Claims 3 and 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishioka et al (either as US 2004/0110096 A1 or as WO 02/086624 A1 as evidenced by US

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2004/0110096 A1). WO 02/086624 A1 has a publication date of October 31, 2002 and the National stage of this document, i.e. US 2004/0110096 A1, has a publication date of June 10, 2004. There is no date applicable under 35 USC 102 (e) with respect to these documents. Thus, the dates of concern are the publication dates alone. Since US 2004/0110096 A1 is the National stage of the PCT application of WO 02/086624 A1, US 2004/0110096 A1 is taken as an English translation of WO 02/086624 A1 and is used as such here as to evidence the content of WO 02/086624 A1. All citations are to the content of US 2004/0110096 A1. With respect to instant claims 3 and 7 and 9, Kishioka et al teach the instant invention with the exception of a specific working example wherein a triglycidyl isocyanurate compound is mixed with a polymer having either a phenolic hydroxy group or a carboxylic acid group. Kishioka et al teach the use of mixtures of their formula (1) with a resin in [0035] with concomitant use of a solvent. One example of formula (1) is as described in [0026] as the epoxy derivative with R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup>



being glycidyl. This is the structure as follows: and is

known as triglycidyl isocyanurate in the art. The resins used to mix with the formula (1) compounds are set forth in [0043] in Kishioka et al and are inclusive of polyhydroxystyrene, i.e. polyvinylphenol, polymaleic acid, polyacrylic acid and polymethacrylic acid among others. With respect to instant claims 3 and 9, the mixing of any one of the formula (1) compounds with any

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of the resins given would have been prima facie obvious to form the compositions of Kishioka et al to be used for forming anti-reflective coatings for use in a lithographic process to obtain an antireflective layer with high reflection reducing effect and does not cause intermixing with a resist layer to be used as set forth by Kishioka et al in their Abstract. The simple substitution of one known element for another to obtain predictable results of an antireflective layer as taught by Kishioka et al is held obvious in the art.

8. Applicant's arguments filed April 6, 2009 have been fully considered but they are not persuasive. Applicants argue that the choices to make the instant composition from the disclosure of Kishioka et al as set forth by the examiner are too extensive to allow a prima facie obvious rejection. The examiner disagrees for the reasons given. The rejection stands.

9. Claims 2 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meador et al (US 5,919,599). With respect to instant claims 2 and 11-14, Meador et al teach the formation of antireflective coatings compositions and methods like that of the instant invention with the exception of disclosing an explicit example with both glycidyl groups and diacids present. However, in column 6, lines 49-60, the presence of glycidyl groups left in the polymer of Meador et al is taught as an option of crosslinking the coatings set forth and acid curing of the coatings are taught to include those wherein the presence of diacids oxalic acid or phthalic acid is taught in column 6, lines 18-25, thus with respect to instant claims 2 and 11-14, the antireflective layers of Meador et al with the modification of such to have any of the acid crosslinkers present and using glycidyl groups in the polymer for crosslinking is the simple substitution of one known element for another to obtain the predictable results of crosslinking



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antireflective coatings and methods of use and thus make a species of the instant invention prima facie obvious.

10. Claims 5-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Hamilton whose telephone number is 571-272-1331.*

*The examiner can normally be reached on Monday through Friday 8:30 am to 5:00 pm.*

*If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (571) 272-0729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.*

*Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.*

/Cynthia Hamilton/  
Primary Examiner, Art Unit 1795

May 25, 2009